

CLAIMS

1. A seamless capsule manufacturing method of manufacturing seamless capsules by ejecting liquid drops from a nozzle into hardening liquid and hardening at least a surface part of each liquid drop, characterized in that

each liquid drop is deformed to show a nonspherical profile by changing the flow rate of hardening liquid while the liquid drop is still in a sol state.

2. The method according to claim 1, characterized in that the liquid drop is drawn to expand in the direction of the flow path by increasing the flow rate of hardening liquid.

3. The method according to claim 1 or 2, characterized in that the formed nonspherical seamless capsules are subjected to a contact process of being brought into contact with ethanol type processing liquid.

4. A seamless capsule manufacturing device comprising a nozzle for ejecting liquid for forming capsules and a flow passage tube containing hardening liquid for hardening at least a surface part of each liquid drop formed from the liquid, characterized in that

the flow passage tube has an inlet part exposed to the nozzle so as to receive the liquid ejected/supplied from the nozzle and a deformation section having a cross sectional area smaller than the inlet part.

5. The device according to claim 4, characterized in that the deformation section is arranged downstream relative to the inlet part at a position where the ejected liquid drops arrive in a sol state.

6. The device according to claim 4 or 5, characterized in that

the cross section of the deformation section is elliptic.

7. The device according to claim 4 or 5, characterized in that

the cross section of the deformation section shows a contour having one or more than one straight lines.

8. The device according to claim 4 or 5, characterized in that

the cross section of the deformation section is polygonal.

9. The device according to claim 4, characterized in that, if the diameter of the largest circle that can be inscribed in the inner periphery of the deformation section is D_1 , the D_1 is greater than the diameter D_0 of the ejected liquid drops and not greater than three times of the diameter D_0 of the ejected liquid drops in the inlet part ($D_0 < D_1 \leq 3D_0$).

10. The device according to claim 4, characterized in that, if the diameter of the largest circle that can be inscribed in the inner periphery of the deformation section is D_1 , the D_1 is between one sixth times and two third times of the inner diameter D_2 of the flow passage tube in the inlet part.

11. The device according to claim 4, characterized in that if the diameter of the ejected liquid drops in the inlet part is D_0 , the cross sectional area S of the deformation section is defined to be within a range of $(\pi/4)D_0^2 < S \leq (9\pi/4)D_0^2$.

12. The device according to claim 4, characterized in that the cross sectional area S of the deformation section is between one thirty sixth times and four ninth times of the cross sectional area of the flow passage tube in the inlet part.

13. A seamless capsule manufacturing method, characterized by manufacturing nonspherical seamless capsules by means of a seamless capsule manufacturing device according to claim 4.

14. The seamless capsule manufacturing method according to claim 13, characterized in that a contact process of brining the seamless capsules into contact with ethanol type processing liquid is additionally conducted on the seamless capsules.

15. A nonspherical seamless capsule obtained by means of a seamless capsule manufacturing method according to claim 13 or 14.